This invention relates to automatic coin controlled vending machines, and particularly to one for dispensing drinks and the like and which are put up in bottles or other cylindrical containers.

In many respects the present structure is the same as that shown in our Patent No. 2,058,637, dated October 27, 1936; our objects now being to improve the arrangement for guiding the bottles from the supporting disc to the delivery receptacle or chute. By reason of the improved arrangement the capacity of the machine is increased, the possibility of lag in the time of delivery is lessened, the construction is simplified, and the machine is easier to load, since no particular care need be taken in arranging the bottles on the supporting disc.

The above and other objects we accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views. Figure 1 is a top plan view of the machine with the cover partly broken away.

Figure 2 is a front elevation of the machine partly in section. Figure 3 is an enlarged fragmentary cross section taken through the delivery chute of the machine.

Figure 4 is a fragmentary cross section of the bottle deflector as on the line 4—4 of Figure 1. Figure 5 is a diagram of the control circuits of the apparatus.

Referring now more particularly to the characters of reference on the drawings, the machine comprises a housing 1 provided with an upper supply and refrigerating chamber 2 and a lower mechanism compartment 3. The chamber 2 if used for dispensing merchandise which must be kept cold is insulated against heat and cold by suitable insulation 4 and is provided with a removable insulated top cover 5 having substantially the same area as the chamber itself.

Turnably mounted in the chamber 2 and forming the goods supporting floor thereof is a disc 6, set as close as practical to the bottom wall of the chamber but spaced slightly from the side walls thereof. This disc serves as the support for a supply of merchandise to be dispensed, shown in this case as being cylindrical bottles 7 standing on end. The disc may be fiat on top or it may have a slight downward slope from its center as shown.

The wall of the chamber 2 while mainly concentric with the disc 6, at the front of the housing 1 extends tangential to said disc in the direction of rotation of the latter for a certain distance as at 8, and then curves back as at 9 to a junction with the curved or concentric portion of the chamber. This forms a niche or recess of sufficient depth to receive a bottle clear of the disc; such bottle as it moves off the disc being supported on a platform 10 or the floor of the recess, which platform is flush with the disc. The chamber wall as a whole therefore, including the tangential portion, forms a retaining and guiding element for the row of bottles dispensed on the disc adjacent its periphery. Said platform at the back of the recess terminates in a circular opening 11 slightly larger than a bottle through which the latter may drop.

With the rotation of the disc the bottles 11, which may be placed on said disc without any particular order or arrangement being necessary, are individually deflected into the recess and fed to a discharge position over the opening 11, with the aid of a spring deflector bar 12. This bar extends outwardly from the center of the disc to a termination substantially on a radial line drawn from the center of the disc to the inception of the tangential wall portion 8. Said termination however is spaced from said portion 8 a distance approximately equal to the diameter of the bottle and is formed with a convex curvature in the direction opposite to the direction of rotation of the disc as plainly shown in Figure 1.

The bar is anchored at its inner end on a fixed shaft 13 projecting axially through the disc from below and on which the latter turns. The bar is shallow in height and is set close to the disc and is preferably formed with a downward slope on its forward side as shown at 14 in Figure 4. In this manner while the bar normally acts as a deflector for the bottles, the latter can if crowded too much, move over the bar.

A horizontally deflectable spring strip 15 extends substantially parallel to the tangential wall 8 from the opposite or inner side of the recess and overhangs the disc; the outer end of this strip being spaced from said tangential wall a distance slightly greater than the diameter of a bottle and being also spaced from the outer end of the bar 12 a distance approximately equal to the diameter of two bottles, as shown in Figure 1.

By means of this construction rotation of the disc in the necessary direction and if loaded with bottles, causes the bottles adjacent the rim of the disc to be first successively pushed onto the stationary platform 10 and into the delivery
opening 11. At the same time the bottles supported on the inner portion of the disc are gradually moved into contact with the leading or forward side of the deflector bar 12 and are shifted along the same toward its outer end as the space for such bottles develops by the discharge of other adjacent bottles from the disc. The bottles rotate somewhat as they are thus moved and their movement toward the periphery of the disc is aided by the slope of the disc surface. In this manner a minimum of power is necessary to operate the disc to disperse the bottles. The spring bar 12 will be deflected by the same amount and on the fixed axial shaft 3 and the hub 2 of said disc depends into the compartment 3, the disc being supported by a suitable anti-friction bearing 22 about the hub. The hub is operatively connected to an electric motor 23 in the compartment 3 by suitable reduction gearing 24. The circuit M to the motor is normally open and is closed by the insertion of a coin in a coin switch box 25 of conventional form mounted on the front of the housing 1 in a convenient position above the delivery opening 19. The motor circuit M has a normally open relay switch R therein, which relay is connected to an auxiliary circuit A in which a normally open coin controlled switch C, and a normally closed trap door controlled switch D are interposed. The switch D is mounted behind the trap door adjacent its hinged end as shown in Figure 3, and is arranged so that it is held closed by the door when the latter is closed, but opens when the door opens. This circuit is identical with that shown and described in our Patent No. 1,857,381, dated May 10, 1932.

When the coin switch is closed by the insertion of a coin in the usual manner the auxiliary circuit A is closed, energizing the relay and closing the relay switch R and energizing the circuit switch of the trap door. The coin switch as usual is closed only momentarily, but the auxiliary circuit still remains closed as long as the motor circuit is closed and as long as the trap door switch is closed. This is because another wire W is connected at one end to the wire of circuit A in which the coin switch C is interposed, and at the other end to the motor circuit between the motor and the relay switch R. Therefore, when the switch R is closed, a relay holding circuit is closed through the line of the motor circuit in which switch B is interposed and including said switch, wire W, the relay coil, and back to the other line of the motor circuit (or main line) through that portion of circuit A in which switch D is interposed. Where switch D is opened, this relay holding circuit is of course broken, and switch R opens to stop the motor. The motor therefore functions to rotate the disc so that the containers may be advanced and fed onto the trap door as previously described.

As soon as the trap door is lowered by the weight of the bottle thereon the auxiliary and relay circuit is broken by the opening of switch D. The motor therefore ceases to operate and the motor circuit will not be again closed, regarding trap door closing of the switch D by the closing of the trap door, until the coin controlled switch is again closed by the insertion of another coin. Only one bottle will thus be delivered at a time, since it is obvious that the drive of the motor ceases the instant a bottle is deposited on the trap door, and before the adjacent bottle can possibly be moved to a position over the opening 11.

The trap door is on a level somewhat lower than platform 18, so that the bottle will be already dropping when it strikes said door, and its momentum will aid in opening the door, enabling a heavier door closing spring to be used than would otherwise be practicable.

From the foregoing description it will be readily seen that the disclosed device: substantially fulfills the object of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from the disclosed construction may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.
10 Having thus described our invention, what we claim as new and useful and desire to secure by Letters Patent is:

1. A dispensing apparatus including a horizontal disc to support a plurality of individual containers to be dispensed, means to rotate the disc in one direction, an outlet chute for a single container depending from the level of the disc adjacent and to one side of the same, a retaining and guide element for those containers which are on the disc adjacent the periphery thereof, said element extending about the disc and comprising a portion concentric with the disc and a portion disposed tangential thereto and extending in the direction of rotation of the disc to the outermost side of the adjacent end of the chute, a platform level with the disc leading along said tangential portion to the chute and on which the containers are received as they follow the tangential portion, and a fixed deflecting bar extending transversely of and above the disc from adjacent the center thereof toward said tangential portion to a termination substantially on a line drawn radially of the disc from the inception of said tangential portion and spaced therefrom a distance approximately the width of a container.

2. A dispensing apparatus including a horizontal disc to support a plurality of individual containers to be dispensed, means to rotate the disc in one direction, a chamber in which the disc is enclosed having a wall mainly concentric with the disc but having a niche, the outer wall of which is tangent to said chamber wall and extends therefrom in the direction of rotation of the disc, a platform at the bottom of the niche level with the disc, there being an outlet opening for a container in the platform at the back of the niche, means cooperating with the containers on the disc to cause them to be successively shifted off the disc and onto said platform with the rotation of the disc; the container supporting surface of the disc having a downward slope outwardly from its center whereby to aid in the movement of the containers on the disc toward the periphery thereof.

3. A structure as in claim 2, in which said bar is of resilient material and is deflectable at its outer end in a horizontal direction.

4. A dispensing apparatus including a horizontal disc to support a plurality of individual containers to be dispensed, means to rotate the disc in one direction, a chamber in which the disc is enclosed having a wall mainly concentric with the disc but having a niche, the outer wall of which is tangent to said chamber wall and extends therefrom in the direction of rotation of the disc, a platform at the bottom of the niche level with the disc, there being an outlet opening for a container in the platform at the back of the niche, means cooperating with the containers on the disc to cause them to be successively shifted off the disc and onto and along said platform with the rotation of the disc, a fixed deflecting bar extending transversely of and above the disc from adjacent the center thereof and extending toward the point of inception of the tangential side of the recess to a termination spaced from said side a distance approximately the width of a container, and a horizontally deflectable spring strip extending toward said bar in overhanging relation to the disc from and secured to the side of the recess opposite and substantially parallel to its tangential side and spaced at its outer end from the outer end of the bar.

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